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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,171

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EXAMINER

KREINER, MICHAEL B

ART UNIT

PAPER NUMBER

4174

MAIL DATE

DELIVERY MODE

03/31/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,171	Applicant(s) ARAFAT ET AL.	
	Examiner Michael Kreiner	Art Unit 4174	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/10/2007</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5-10, 12-14, and 16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by G. S. Wing (U.S. Pat. No. 3,135,486).

Regarding claim 1, Wing teaches a protective skin (21 in fig. 1) for an aircraft comprising: a leading edge member (col. 3 line 34) forming an airfoil surface having an exterior surface (col. 2 line 45) and an opposing interior surface (col. 2 line 52); at least one pocket recessed into the interior surface (23 in fig. 1), each pocket having a thickness that is less than the thickness of the leading edge member, each pocket being configured to deform in response to an impact from an object with the leading edge member.

Regarding claim 2, Wing teaches the protective skin according to claim 1, wherein the leading edge member (col. 3 line 34) forms the leading edge of a wing member (col. 1 line 1).

Regarding claim 5, Wing teaches the protective skin according to claim 1, wherein the pockets are formed by a chemical etching process (col. 2 lines 56-7).

Regarding claim 6, no weight is given to the process by which the pockets are formed, since the claim is drawn to an article and not a method.

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Regarding claim 7, Wing teaches the protective skin according to claim 1, wherein the leading edge member (col. 3 line 34) is curved about a longitudinal axis so as to form an upper airfoil surface and a lower airfoil surface (fig. 1, col. 2 lines 48-50).

Regarding claim 8, Wing teaches the protective skin according to claim 7, wherein the at least one pocket comprises: a plurality of pockets (23) arranged in a selected pattern over the interior surfaces of the upper airfoil surface and the lower airfoil surface (fig. 3).

Regarding claim 9, Wing teaches the protective skin according to claim 8, wherein each pocket (23) is formed in one of the following geometric shapes: circle, oval, rectangle, square (fig. 3).

Regarding claim 10, Wing teaches the protective skin according to claim 8, wherein the pattern of pockets on the interior surface of the upper airfoil surface is a mirror image of the pattern of pockets on the interior surface of the lower airfoil surface (fig. 3).

Regarding claim 12, Wing teaches the protective skin according to claim 1, further comprising: at least one rib member (30 in fig. 4) connected to the interior surface of the leading edge member for attaching the leading edge member to a substructure of the aircraft (col. 3 lines 17-22).

Regarding claim 13, Wing teaches the protective skin according to claim 1, further comprising: a stiffening means (30) connected to the interior surface of the leading edge member for providing localized stiffness to the leading edge member.

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Regarding claim 14, Wing teaches the protective skin according to claim 13, wherein the stiffening means (30) is an elongated I-shaped beam (30 has flanges 32 and 33 along its top and bottom, giving it an I-beam cross section).

Regarding claim 16, Wing teaches the protective skin according to claim 13, wherein the stiffening means (30) is also connected to a substructure of the aircraft (40).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wing as applied to claim 8 above. It would have been obvious to one skilled in the art at the time of the invention to create different pocket patterns on opposing sides of the protective skin. Airfoils typically have a concave under-camber, which greatly reduces the risk of bird collision, and thus reduces the need for reinforcement. The weight of the wing could be minimized by removing more material from the lower surface, resulting in a non-mirror image between the lower and upper surfaces.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wing as applied to claim 13 above, and further in view of W. B. Stout (U.S. Pat. No. 1,866,680).

Regarding claim 15, Wing teaches the protective skin according to claim 13. Wing fails to teach wherein the stiffening means is not connected to a substructure of the

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aircraft. Stout teaches wherein the stiffening means (175 in fig. 14) is not connected to a substructure of the aircraft (col. 5 lines 127-8). It would have been obvious to one skilled in the art at the time of the invention to leave the stiffening means unconnected to the substructure, in order to reduce the weight of the aircraft.

5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wing in view of Carlson et al. (U.S. Pat. No. 4,976,396).

Regarding claim 3, Wing teaches the protective skin according to claim 1, wherein the leading edge member (col. 3 line 34) forms a leading edge (as previously discussed). Wing fails to teach a horizontal stabilizer. Carlson teaches an airplane with horizontal stabilizers (20 in fig. 1, col. 6 lines 17-20) as well as wings (14 in fig. 1, col. 6 lines 17-20). It would have obvious to one skilled in the art at the time of the invention to apply Wing's reduced-weight leading edge to horizontal stabilizers in order to reduce the weight of an aircraft.

Regarding claim 4, Wing teaches the protective skin according to claim 1, wherein the leading edge member (col. 3 line 34) forms a leading edge (as previously discussed). Wing fails to teach a vertical fin. Carlson teaches an airplane with a vertical fin (18 in fig. 1, col. 6 lines 17-20) as well as wings (14 in fig. 1, col. 6 lines 17-20). It would have obvious to one skilled in the art at the time of the invention to apply Wing's reduced-weight leading edge to a vertical fin in order to reduce the weight of an aircraft.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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D. E. Gillum (U.S. Pat. No. 2,371,754) teaches a method for stiffening the leading edge of a wing by affixing wires in various patterns to the inside surface of the leading edge. Gillum includes many different shapes for the wire patterns, including circles, ovals, rectangles, and squares (figs. 8-11, 13).

M. C. Sanz (U.S. Pat. No. 2,739,047) teaches a process of chemical etching to create a reinforced rocket booster casing. Figures 5 and 6 show a member whose lower interior surface is not a mirror image of its upper interior surface, in that pocket 52 has different dimensions than pocket 53.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kreiner whose telephone number is (571)270-5379. The examiner can normally be reached on Monday-Thursday 7:30am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly D. Nguyen can be reached on (571)272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. K./
Examiner, Art Unit 4174

/Kimberly D Nguyen/
Supervisory Patent Examiner, Art Unit 4174